# ELECTRICAL JUNCTION BOX


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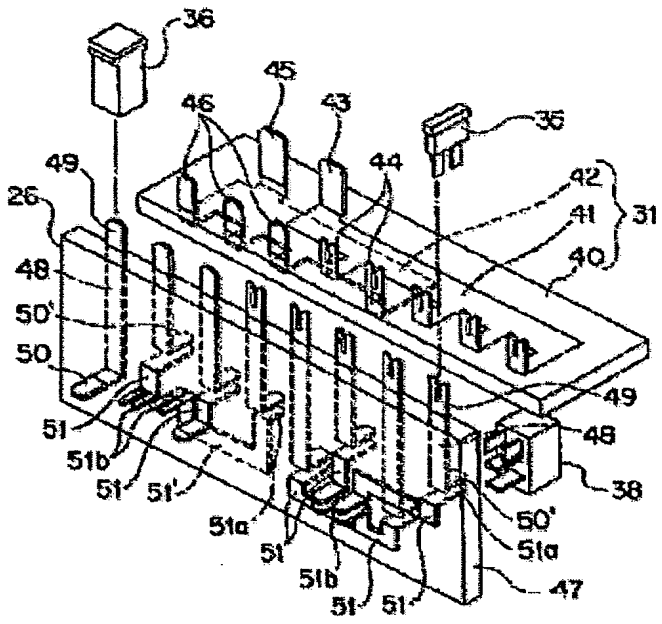
Abstract of **JP11285132**

PROBLEM TO BE SOLVED: To provide an electrical junction box which does not have densely mounted electrical components on its upper surface and, furthermore, does not use stepped tabs which may cause troubles. SOLUTION: An upper wiring board 31, composed of an insulating board 40 and bus-bars 41 and 42 which are provided on the insulating board 40 and have standing tabs 43-46 formed on their ends and a standing wiring board 26 composed of an insulating board 47 which is placed in a state of crossing with respect to the upper wiring board 31 and a plurality of bus-bars 48 which are provided on the insulating board 47 which have bent tabs 50 and 51' formed respectively on their lower parts, protruding from both the sides of the insulating board 47 and have flat tabs 49 extending upward are provided in the case of an electrical junction box. Both the end parts of the bent tabs 50 and 50' protrude into attachment parts provided on both the sides of the case to be electrically connected to electrical components which do not required frequent maintenance.

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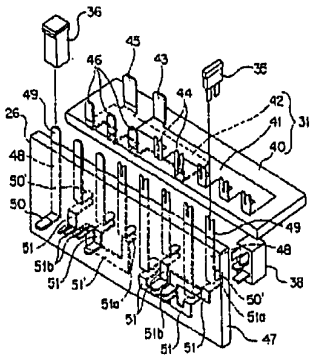
# (54) ELECTRICAL JUNCTION BOX



(57) Abstract:

PROBLEM TO BE SOLVED: To provide an electrical junction box which does not have densely mounted electrical components on its upper surface and, furthermore, does not use stepped tabs which may cause troubles.

SOLUTION: An upper wiring board 31, composed of an insulating board 40 and bus-bars 41 and 42 which are provided on the insulating board 40 and have standing tabs 43-46 formed on their ends and a standing wiring board 26 composed of an insulating board 47 which is placed in a state of crossing with respect to the upper wiring board 31 and a plurality of bus-bars 48 which are provided on the insulating board 47 which have bent tabs 50 and 51' formed respectively on their lower parts, protruding from both the sides of the insulating board 47 and have flat tabs 49 extending upward are provided in the case of an electrical junction box. Both the end parts of the bent tabs 50 and 50' protrude into attachment parts provided on both the sides of the case to be electrically connected to electrical components which do not required frequent maintenance.



FULL CONTENTS

[Claim(s)]

[Claim 1] The case where the insertion section of an electrical part required for a maintenance is arranged in a top face, and the insertion section of other electrical parts is prepared in a side face, The upper wiring plate with which crookedness formation of the standing-up tab which two or more busbars are arranged by the electric insulating plate held in this case, and projects at the edge of this busbar at the insertion circles of said top face is carried out, It is formed by the crookedness tab which two or more busbars are arranged by the electric insulating plate arranged in the shape of intersection to this upper wiring plate, and projects at one edge of this busbar at the insertion circles of said side face, and [ the other-end section ] The electric junction box characterized by having the standing-up patchboard with which the flat-surface tab which projects in the insertion circles of said top face is formed.

[Claim 2] It is the electric junction box according to claim 1 characterized by the upper bed edge of said standing-up patchboard intersecting the edge of said upper wiring plate.

[Claim 3] It is the electric junction box according to claim 1 characterized by piling up two or more sheets of said standing-up patchboard, and an upper bed edge intersecting the pars intermedia of said upper wiring plate.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the electric junction box used for wiring of an automobile etc.

[0002]

[Description of the Prior Art] Drawing 7 is the electric junction box A1 of conventional parallel. [ two or more patchboards 1 which are exploded perspective views and arranged two or more busbars 3 in the electric insulating plate 2 ] It is stored by the laminating condition inside the lower cover 4, the standing-up tab 3a crooked in the upper part from the edge of busbar 3 penetrates the electric insulating plate 2 laminated up, and the relay terminal 5 is attached in a projection and its point from the surface of the patchboard 1 of the top layer. Electrical connection of the suspension tab (not shown) caudad crooked from the edge of busbar 3 is carried out to the connector (not shown) which penetrates the electric insulating plate 2 laminated caudad, and is inserted in the connector insertion section 6 of the lower cover 4.

[0003] The connector insertion section which a fuse 8, a fusible link 9, and relay 10 grade are inserted in the top face of the up covering 7 put on the laminated patchboard 1, in addition holds the terminal connector of wire harness is prepared, and these electrical machinery and apparatus are connected to busbar 3 through the relay terminal 5. [ with loading of the electronic unit which contained the increase in the number of internal circuitries and the control circuit of these electronic autoparts by marked increase of mounted electronic autoparts ] Since there were a problem which runs short of the insertion tooth spaces of the each electrical machinery and apparatus and wire harness which are carried in the top face of the up covering 7, and problems, such as installation density becoming high and receiving heat interference, the insertion section could be prepared also in the side face of the electric junction box.

[0004] As an electric junction box with which the insertion section is prepared also in a side face, the technique of a description etc. is, for example in a publication of unexamined utility model application Heisei 4-61417 number and JP,H5-3619,A. electric junction box A2 indicated in the publication of unexamined utility model application Heisei 4-61417 number As shown in the exploded perspective view of drawing 8 , it consists of the laminating busbar patchboard B and insulating case C which holds this. insulating case C -- upper housing Ca, the lower casing Cb, and flank case Cc being constituted -- flank case Cc **** -- two or more fuse cavities 11 and two or more connector insertion sections 12 are formed.

[0005] The laminating busbar patchboard B consists of the electric insulating plate 13 of two sheets, two or more busbars 14 arranged in up-and-down both sides and the interface of 13' and an electric insulating plate 13, a side board 15 installed in the 1 side of 13', 15', etc. There are the level difference tab 16 crooked in crank form in pars intermedia since a head corresponded to the fuse cavity 11 and the connector insertion section 12, and a flat-surface tab 17 which is not crooked in crank form in busbar 14. The level difference tab 16 and the same level difference tab are used also for the electric junction box given in JP,H5-3619,A.

[0006]

[Problem(s) to be Solved by the Invention] In order to carry out crookedness processing of the pars intermedia at crank form, the problem to which processing becomes complicated, the problem to which dimensional accuracy worsens, the problem to which the assembliability of the busbar 14 which has the level difference tab 16 worsens, etc. produce the level difference tab 16. This invention offers the electric junction box which does not use the level difference tab which moreover had the above problems, without clustering loading of an electrical part in a top face for the purpose of solving this technical problem.

[0007]

[Means for Solving the Problem] In order to attain the above-mentioned object, [ the electrical connection of this invention ] The case where the insertion section of an electrical part required for a maintenance is arranged in a top face, and the insertion section of other electrical parts is prepared in a side face, The upper wiring plate with which crookedness formation of the standing-up tab which two or more busbars are arranged by the electric insulating plate held in this case, and projects at the edge of this busbar at the insertion circles of said top face is carried out, It is formed by the crookedness tab which two or more busbars are arranged by the electric insulating plate arranged in the shape of intersection to this upper wiring plate, and projects at one edge of this busbar at the insertion circles of said side face, and [ the other-end section ] It is characterized by having the standing-up patchboard with which the flat-surface tab which projects in the insertion circles of said top face is formed.

[0008] The upper bed edge of said standing-up patchboard can be constituted so that the upper bed edge of said standing-up patchboard which can consider as the composition which intersects the edge of said upper wiring plate, or was piled up two or more sheets may intersect the pars intermedia of said upper wiring plate.

[0009]

[Embodiment of the Invention] The example of the form of implementation of invention is hereafter explained with reference to Drawings. Drawing 1 is electric junction box C1 which shows the 1st work example of this invention. It is drawing of longitudinal section and drawing 2 is the exploded perspective view of drawing 1 . As shown in drawing 2 , it is electric junction box C1. [ a case 20 ] It is constituted by the L typeface-like side cover 21 by

which the transverse wall section 21b is formed in the upper bed of the vertical wall 21a, the side cover 22 which polymerizes in the vertical wall 21a, and the main cover 23 put on the side covers 21 and 22 which polymerized.

[0010] The locking projection 24 by which an inclined plane 24a is formed in the direction of a side cover 21, and a lock face 24b is formed in an opposite hand protrudes on the end face of a side cover 22, and [ the end face of a side cover 21 ] The locking piece 25 which projects in the direction of a side cover 22 is formed, and the stop hole 25a is formed in a locking piece 25. Therefore, when side covers 21 and 22 are polymerized, the locking projection 24 inserts into the stop hole 25a, both the side covers 21 and 22 are combined, and the space which holds the standing-up patchboard 26 in the interior is formed.

[0011] [ the field of one field (in drawing 1 , it is right-hand side) of the standing-up patchboard 26 held in the interior of side covers 21 and 22 ] Contacting the base of the relay insertion sections 27 and 27 established in the vertical wall 21a of the side cover 21, the field of another side contacts the base of the connector insertion section 28 established in the side cover 22. A main cover 23 is put on the top face of side covers 21 and 22, and the locking projection 29 prepared in the peripheral wall surface of side covers 21 and 22 inserts into the stop hole 30 prepared in the main cover 23. A main cover 23 fixes in side covers 21 and 22, and the space which holds the upper wiring plate 31 (refer to drawing 1 and drawing 3 ) in the interior is formed.

[0012] The top face of a main cover 23 is a field which is easy to maintain. The fuse insertion section 32, the fusible link insertion section 33, and the relay insertion section 34 which insert the fuse 35, the fusible link 36, and relay 37 which are an electrical part required for a maintenance, respectively are prepared in this field (refer to drawing 1 - drawing 3 ). On the other hand, since the relay 38 and connector 39 which seldom need a maintenance are inserted in the relay insertion section 27 of the side face of a case 20, and the connector insertion section 28, the installation density of the electrical part installed in the top face of a main cover 23 is eased, and problems, such as receiving heat interference, are solved.

[0013] As shown in drawing 3 , as for the upper wiring plate 31, busbars 41 and 42 are arranged by the electric insulating plate 40. The standing-up tabs 43 and 44 crooked up are formed in the edge of busbar 41. The standing-up tabs 45 and 46 crooked in the upper part from the edge of busbar 42 penetrate an electric insulating plate 40, the point of the standing-up tabs 43-46 is inserted in the insertion sections 32-34 of a main cover 23, and electrical connection is carried out to an electrical part required for a maintenance.

[0014] The standing-up patchboard 26 is in the state to which the upper bed section contacted the end (left end) of the upper wiring plate 31. Two or more busbars 48 of a rising state are horizontally arranged by the electric insulating plate 47 which intersects a right angle mostly to the upper wiring plate 31, and the flat-surface tab 49 formed in the upper bed of each busbar 48 is inserted in it at the insertion section 32 of a main cover 23. Electrical connection of the flat-surface tab 49 inserted in the insertion section 32 is carried out through the standing-up tabs 44 and 46 and fuse 35 of busbars 41 and 42 which are inserted in the insertion section 32, or a relay terminal.

[0015] The crookedness tab 50 which is crooked leftward and projects in drawing 3 , and crookedness tab 50' which crooks and projects rightward are prepared in the soffit of two or more busbars 48. Under the crookedness tab 50 and 50', the busbar 51 of various configurations and 51' are prepared, busbar 51 is arranged in the field on the left-hand side of an electric insulating plate 47 in drawing 3 , and busbar 51' is arranged in the field on the right-hand side of an electric insulating plate 47. The crookedness tab 51a which is crooked and projects on the right-hand side of an electric insulating plate 47, and the crookedness tab 51b which crooks and projects leftward are formed in the both ends of busbar 51 and 51'.

[0016] It is crooked leftward, and it connects with the connector 39 of the connector insertion section 28, and the projecting crookedness tabs 50 and 51b connect crookedness tab 50' and the crookedness tab 51a to the relay 38 of the relay insertion section 27. As mentioned above, since the electrical part which seldom needs a maintenance was attached to the side face of electric junction box C1, it is electric junction box C1. The thermal engine performance of the electrical part which can miniaturize a top face conventionally and is installed in a top face improves.

[0017] Drawing 4 is electric junction box C2 of the 2nd work example of this invention. It is drawing of longitudinal section and is electric junction box C1 of the 1st work example. [ a different point ] It is having combined the upper bed of the standing-up patchboards 26 and 26 piled up two or more sheets (this example two sheets) so that the pars intermedia of the underside of the upper wiring plate 31 might be contacted (refer to drawing 5 ), and the configuration of a case 20 is different with a difference of this combination state.

[0018] As shown in drawing 4 , it is electric junction box C2. [ a case ] It is constituted by the L typeface-like side cover 52 by which the transverse wall section 52b is formed in the upper bed of the vertical wall 52a, the L typeface-like side cover 53 by which the transverse wall section 53b is formed in the upper bed of the vertical wall 53a, and the main cover 54 put on the side covers 52 and 53 which polymerized. The fuse insertion section 32 is formed in a main cover 54 at two rows, and the flat-surface tab 49 which projects in the upper part from each standing-up patchboard 26 and 26 projects in the fuse insertion section 32 of each train (refer to drawing 5 and drawing 6 ).

[0019] Since the fuse insertion section 32 is formed in a main cover 54 at two rows, the die length of main cover 54 longitudinal direction can be shortened, and it is electric junction box C2. It can miniaturize. Moreover, since one of the flat-surface tabs 49 of two or more standing-up patchboards (this example two) 26 can be chosen and connected, there is an advantage which the degree of freedom of circuit **** increases.

[0020] The relay insertion section 34 and the fusible link insertion section (not shown) are prepared in the top face of a main cover 54. It is the same as that of the 1st work example that the crookedness tab 50 which the relay insertion section 27 was formed in the side cover 52, and the connector insertion section 28 was formed in the side cover 53, and projected from the standing-up patchboards 26 and 26, and 50' are inserted in the connector insertion section 28 and the relay insertion section 27.

[0021]

[Effect of the Invention] Since this invention is constituted as stated above, effectiveness which is indicated below is done so.

(1) Even if the electronic autoparts installed in a case by installing only an electrical part required for a maintenance in the top face which a case tends to maintain, and preparing other electrical parts in the side face of a case increased rapidly, the installation density on the top face of a case became high, and it stopped producing the conventional problems, such as receiving heat interference.

(2) Arrange the upper wiring plate and standing-up patchboard which prepared busbar in the electric insulating plate in the shape of intersection. The crookedness tab with which crookedness formation of the standing-up tab is carried out at the busbar of an upper wiring plate, it is crooked from the edge of busbar in a standing-up patchboard, and a head is inserted in the insertion section of the side face of a case, Since the flat-surface tab with which a projection head is inserted in the insertion section on the top face of a case planate from the edge of busbar was formed, it becomes unnecessary to use the level difference tab crooked in crank form in medium like the conventional electric junction box which prepared the insertion section in the side face of the case, and the assembliability of busbar improves.

(3) when a standing-up patchboard is made into two or more sheet superposition The advantage which can shorten the top face of a case since the insertion section arranged on the case top face can be made into two or more rows, and the advantage which the degree of freedom which chooses the tab which projects in the upper part produces, Since many

crookedness tabs can be made to project from both sides of the standing-up patchboard of superposition, the structure of a standing-up patchboard can simplify and there is an advantage which can reduce parts manufacturing and manday with a group.

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[Brief Description of the Drawings]
[Drawing 1] It is drawing of longitudinal section of the electric junction box in which the 1st work example of this invention is shown.
[Drawing 2] It is the exploded perspective view of drawing 1 .
[Drawing 3] It is a perspective view explaining the structure of the patchboard arranged on intersection of drawing 1 .
[Drawing 4] It is drawing of longitudinal section of the electric junction box in which the 2nd work example of this invention is shown.
[Drawing 5] It is the perspective view of the electric junction box of the 2nd work example of inside with a group.
[Drawing 6] It is important section drawing of longitudinal section of the patchboard arranged on intersection of the electric junction box of the 2nd work example.
[Drawing 7] It is the exploded perspective view of the electric junction box of conventional parallel.
[Drawing 8] It is the exploded perspective view of the electric junction box of other conventional parallel.
[Description of Notations]
C1, C2 Electric junction box
20 Case
21, 22, 52, 53 Side cover
23, 54 Main cover
26 Standing-Up Patchboard
27 Relay Insertion Section
28 Connector Insertion Section
31 Upper Wiring Plate
32 Fuse Insertion Section
33 Fusible Link Insertion Section
34 Relay Insertion Section
36 Fusible Link
37 Relay
40, 47 Electric insulating plate
41, 42, 48 Busbar
43, 44, 45, 46 Standing-up tab
49 Flat-Surface Tab
38 Relay
39 Connector
50 Crookedness Tab

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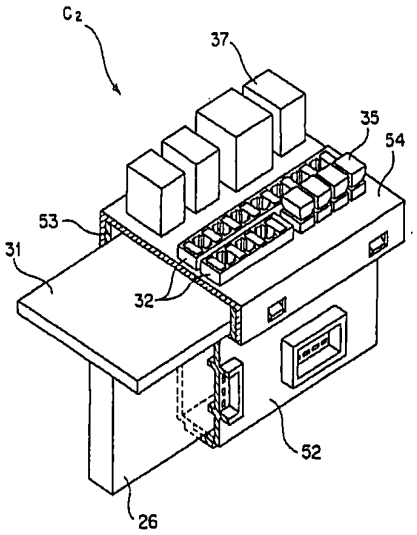
[Drawing 5]

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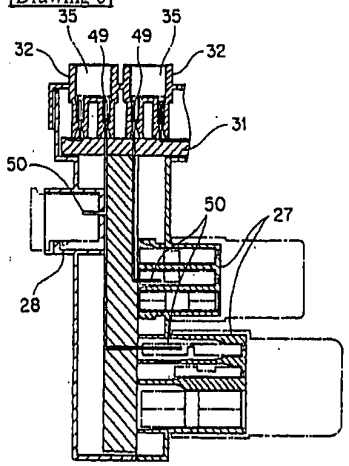
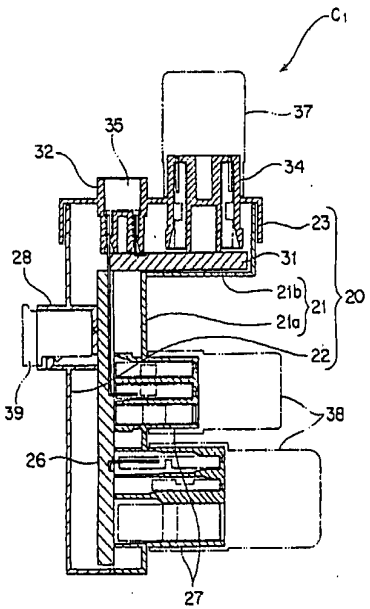
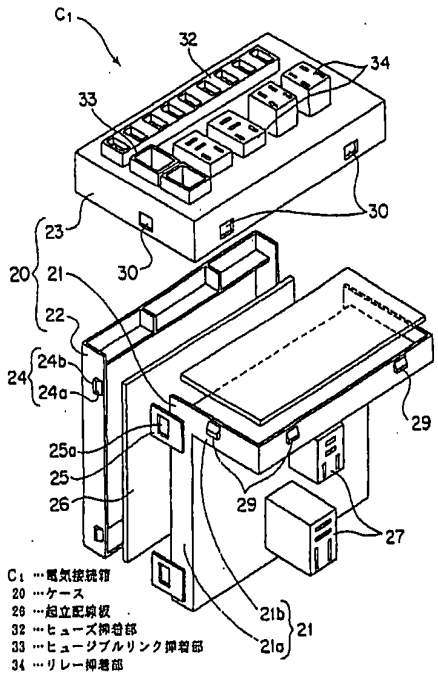



[Drawing 1]



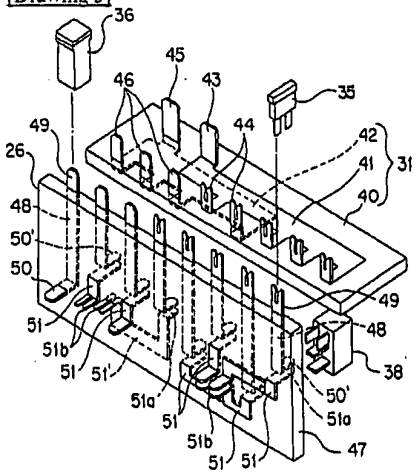

C1 …電気接続箱
20 …ケース
26 …起立配線板
27 …リレー挿着部
28 …コネクタ挿着部
31 …上部配線板
32 …ヒューズ挿着部
34 …リレー挿着部
38 …リレー
39 …コネクタ

[Drawing 2]




C1 …電気接続箱
20 …ケース
26 …起立配線板
32 …ヒューズ挿着部
33 …ヒューズプルリンク挿着部
34 …リレー挿着部

[Drawing 3]




31 …上部配線板
38 …リレー
40 …絶縁板
41 …ブスバー
42 …ブスバー
43 …起立タブ
44 …起立タブ
45 …起立タブ
46 …起立タブ
47 …絶縁板
48 …ブスバー
49 …平面タブ
50 …屈曲タブ
50' …屈曲タブ

[Drawing 4]

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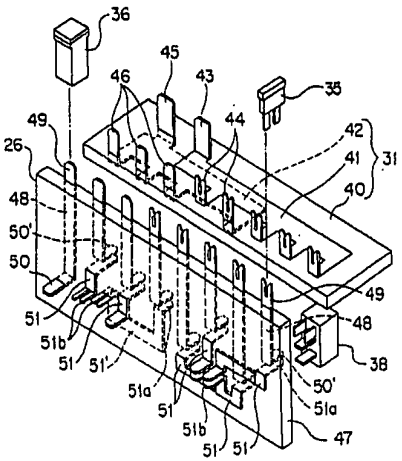
(54)【発明の名称】　電気接続箱

(57)【要約】
【課題】　電気接続箱のケースの上面だけでなく側面にも電気部品を挿着するには、中間部をクランク状に屈曲した段差タブが必要であり、組付性が悪くなる等の問題があった。
【解決手段】　絶縁板４０に配設されたブスバー４１，４２の端部に起立タブ４３～４６を設けた上部配線板３１と、上部配線板３１に対して交差状に配設される絶縁板４７に複数のブスバー４８が配設され、該ブスバー４８の下方の絶縁板４７の両面にそれぞれ屈曲タブ５０，５０′を設け、上端に上方に延びる平面タブ４９を設けた起立配線板２６とを電気接続箱のケース内に設けた。屈曲タブ５０，５０′の両端部はケースの側面に設けられる挿着部内に突出し、メンテナンスをあまり必要としない電気部品に電気接続される。




31 …上部配線板　43 …起立タブ　48 …ブスバー
38 …リレー　44 …起立タブ　49 …平面タブ
40 …絶縁板　45 …起立タブ　50 …屈曲タブ
41 …ブスバー　46 …起立タブ　50′…屈曲タブ
42 …ブスバー　47 …絶縁板



1

【特許請求の範囲】
【請求項１】　上面にメンテナンスに必要な電気部品の挿着部が配設され、側面に他の電気部品の挿着部が設けられるケースと、該ケース内に収容される絶縁板に複数のブスバーが配設され該ブスバーの端部に、前記上面の挿着部内に突出する起立タブが屈曲形成される上部配線板と、該上部配線板に対して交差状に配設される絶縁板に複数のブスバーが配設され該ブスバーの一方の端部に、前記側面の挿着部内に突出する屈曲タブが形成され、他方の端部には、前記上面の挿着部内に突出する平面タブが設けられる起立配線板とを備えたことを特徴とする電気接続箱。
【請求項２】　前記起立配線板の上端縁は前記上部配線板の端部に交差することを特徴とする請求項１記載の電気接続箱。
【請求項３】　前記起立配線板は複数枚重ね合わされ、上端縁が前記上部配線板の中間部に交差することを特徴とする請求項１記載の電気接続箱。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、自動車等の配線に用いられる電気接続箱に関する。
【０００２】
【従来の技術】図７は従来例の電気接続箱Ａ₁の分解斜視図であり、絶縁板２に複数のブスバー３を配設した複数個の配線板１が、下部カバー４の内部に積層状態に収納され、ブスバー３の端部から上方に屈曲する起立タブ３ａが、上方に積層されている絶縁板２を貫通して最上層の配線板１の表面から突出し、その先端部に中継端子５が嵌着される。ブスバー３の端部から下方に屈曲する垂下タブ（図示しない）は、下方に積層されている絶縁板２を貫通して下部カバー４のコネクタ挿着部６に挿着されるコネクタ（図示しない）に電気接続される。
【０００３】積層された配線板１の上に被せられる上部カバー７の上面にヒューズ８，ヒュージブルリンク９，リレー１０等が挿着され、この他にワイヤーハーネスの端末コネクタを収容するコネクタ挿着部が設けられ、これらの電気機器は中継端子５を介してブスバー３に接続する。車載の電装品の激増により内部回路数の増加やこれら電装品の制御回路を内蔵した電子ユニットの搭載により、上部カバー７の上面に搭載される各電気機器やワイヤーハーネスの挿着スペースが不足する問題と、設置密度が高くなって熱干渉を受けるなど問題があるので、電気接続箱の側面にも挿着部を設けられるようになった。
【０００４】側面にも挿着部が設けられる電気接続箱としては、例えば実開平４－６１４１７号，特開平５－３６１９号公報に記載の技術などがある。実開平４－６１４１７号に記載された電気接続箱Ａ₂は、図８の分解斜視図に示すように、積層ブスバー配線板Ｂとこれを収容する絶縁ケースＣとから成り、絶縁ケースＣは上部ケースＣ₀，下部ケースＣ₁，側部ケースＣ₂により構成され、側部ケースＣ₂には複数のヒューズキャビティ１１，複数のコネクタ挿着部１２が設けられる。

2

【０００５】積層ブスバー配線板Ｂは、２枚の絶縁板１３，１３′の上下両面と中間面に配設された複数のブスバー１４および絶縁板１３，１３′の一側に垂設された側板１５，１５′などで構成される。ブスバー１４には、先端がヒューズキャビティ１１およびコネクタ挿着部１２に対応するために中間部をクランク状に屈曲された段差タブ１６と、クランク状に屈曲されない平面タブ１７がある。特開平５－３６１９号公報に記載の電気接続箱にも段差タブ１６と同様な段差タブが使用されている。
【０００６】
【発明が解決しようとする課題】段差タブ１６は、中間部をクランク状に屈曲加工されるために、加工が複雑になる問題と、寸法精度が悪くなる問題と、段差タブ１６を有するブスバー１４の組付性が悪くなる問題などが生じる。本発明はかかる課題を解決することを目的とし、上面に電気部品の搭載を密集させることなく、しかも、上記のような問題をかかえた段差タブを使用しない電気接続箱を提供するものである。
【０００７】
【課題を解決するための手段】上記目的を達成するために、本発明の電気接続は、上面にメンテナンスに必要な電気部品の挿着部が配設され、側面に他の電気部品の挿着部が設けられるケースと、該ケース内に収容される絶縁板に複数のブスバーが配設され該ブスバーの端部に、前記上面の挿着部内に突出する起立タブが屈曲形成される上部配線板と、該上部配線板に対して交差状に配設される絶縁板に複数のブスバーが配設され該ブスバーの一方の端部に、前記側面の挿着部内に突出する屈曲タブが形成され、他方の端部には、前記上面の挿着部内に突出する平面タブが設けられる起立配線板とを備えたことを特徴とするものである。
【０００８】前記起立配線板の上端縁は前記上部配線板の端部に交差する構成とすることができ、或いは、複数枚重ね合わされた前記起立配線板の上端縁が前記上部配線板の中間部に交差するように構成することができる。
【０００９】
【発明の実施の形態】以下、発明の実施の形態の具体例を図面を参照して説明する。図１は本発明の第１実施例を示す電気接続箱Ｃ₁の縦断面図であり、図２は図１の分解斜視図である。図２に示すように、電気接続箱Ｃ₁のケース２０は、垂直壁部２１ａの上端に水平壁部２１ｂが設けられるＬ字形状のサイドカバー２１と、垂直壁部２１ａに重合するサイドカバー２２と、重合されたサイドカバー２１，２２の上に被せられるメインカバー２３とにより構成される。

【００１０】サイドカバー２２の端面には、サイドカバー２１の方向に傾斜面２４ａが形成され、反対側に係止面２４ｂが形成される係止突起２４が突設され、サイドカバー２１の端面には、サイドカバー２２の方向に突出する係止片２５が設けられ、係止片２５に係止孔２５ａが設けられる。従って、サイドカバー２１，２２を重合したときに、係止突起２４が係止孔２５ａに係入して両サイドカバー２１，２２が結合され、内部に起立配線板２６を収容する空間が形成される。

【００１１】サイドカバー２１，２２の内部に収容された起立配線板２６の一方の面（図１において右側）の面は、サイドカバー２１の垂直壁部２１ａに設けられたリレー挿着部２７，２７の底面に当接し、他方の面は、サイドカバー２２に設けられたコネクタ挿着部２８の底面に当接する。サイドカバー２１，２２の上面にメインカバー２３が被せられ、サイドカバー２１，２２の周壁面に設けられた係止突起２９がメインカバー２３に設けられた係止孔３０に係入し、メインカバー２３がサイドカバー２１，２２に固着され、内部に上部配線板３１（図１，図３参照）を収容する空間が形成される。

【００１２】メインカバー２３の上面はメンテナンスし易い面であり、メンテナンスに必要な電気部品であるヒューズ３５，ヒュージブルリンク３６，リレー３７をそれぞれ挿着するヒューズ挿着部３２，ヒュージブルリンク挿着部３３，リレー挿着部３４がこの面に設けられる（図１～図３参照）。これに対してあまりメンテナンスを必要としないリレー３８，コネクタ３９がケース２０の側面のリレー挿着部２７，コネクタ挿着部２８に挿着されるので、メインカバー２３の上面に設置される電気部品の設置密度が緩和され、熱干渉を受けるなど問題が解消される。

【００１３】図３に示すように、上部配線板３１は、絶縁板４０にブスバー４１，４２が配設され、ブスバー４１の端部には上方に屈曲する起立タブ４３，４４が形成され、ブスバー４２の端部から上方に屈曲する起立タブ４５，４６は絶縁板４０を貫通し、起立タブ４３～４６の先端部はメインカバー２３の挿着部３２～３４に挿入され、メンテナンスに必要な電気部品に電気接続される。

【００１４】起立配線板２６は、上端部が上部配線板３１の一端（左端）に接触した状態で、上部配線板３１に対してほぼ直角に交差する絶縁板４７に、起立状態の複数のブスバー４８が水平方向に配列され、各ブスバー４８の上端に形成された平面タブ４９がメインカバー２３の挿着部３２に挿入される。挿着部３２に挿入された平面タブ４９は、挿着部３２に挿入されるブスバー４１，４２の起立タブ４４，４６とヒューズ３５や中継端子を介して電気接続される。

【００１５】複数のブスバー４８の下端には、図３において左方向に屈曲して突出する屈曲タブ５０と、右方向に屈曲して突出する屈曲タブ５０′が設けられる。屈曲タブ５０および５０′の下方には各種形状のブスバー５１および５１′が設けられ、ブスバー５１は図３において絶縁板４７の左側の面に配設され、ブスバー５１′は絶縁板４７の右側の面に配設される。ブスバー５１，５１′の両端部に、屈曲して絶縁板４７の右側に突出する屈曲タブ５１ａと、左方向に屈曲して突出する屈曲タブ５１ｂが設けられる。

【００１６】左方向に屈曲して突出する屈曲タブ５０及び５１ｂはコネクタ挿着部２８のコネクタ３９に接続し、屈曲タブ５０′と屈曲タブ５１ａはリレー挿着部２７のリレー３８に接続する。以上のように、メンテナンスをあまり必要としない電気部品を電気接続箱$C_1$の側面に取り付けたので、電気接続箱$C_1$の上面を従来よりも小型化することができ、且つ、上面に設置される電気部品の熱的性能が向上する。

【００１７】図４は本発明の第２実施例の電気接続箱$C_2$の縦断面図であり、第１実施例の電気接続箱$C_1$と相違する点は、複数枚（本実施例では２枚）重ね合わせた起立配線板２６，２６の上端を上部配線板３１の下面の中間部に当接するように組み合わせたことであり（図５参照）、この組み合わせ状態の相違によりケース２０の形状が相違する。

【００１８】図４に示すように、電気接続箱$C_2$のケースは、垂直壁部５２ａの上端に水平壁部５２ｂが設けられるＬ字形状のサイドカバー５２と、垂直壁部５３ａの上端に水平壁部５３ｂが設けられるＬ字形状のサイドカバー５３と、重合されたサイドカバー５２，５３の上に被せられるメインカバー５４により構成される。メインカバー５４にはヒューズ挿着部３２が２列に設けられ、それぞれの起立配線板２６，２６から上方に突出する平面タブ４９が各列のヒューズ挿着部３２に突出する（図５，図６参照）。

【００１９】メインカバー５４にヒューズ挿着部３２が２列に設けられるので、メインカバー５４長手方向の長さを短縮することができ、電気接続箱$C_2$を小型化することができる。又、複数の（本実施例では２つの）起立配線板２６のうちのどちらかの平面タブ４９を選択して結線できるので回路配索の自由度が増す利点がある。

【００２０】メインカバー５４の上面にリレー挿着部３４やヒュージブルリンク挿着部（図示しない）が設けられ、サイドカバー５２にリレー挿着部２７が設けられ、サイドカバー５３にコネクタ挿着部２８が設けられ、起立配線板２６，２６から突出した屈曲タブ５０，５０′がコネクタ挿着部２８，リレー挿着部２７に挿入されることは第１実施例と同様である。

【００２１】

【発明の効果】本発明は以上述べたように構成されているので、次に記載されるような効果を奏する。

(1) ケースのメンテナンスし易い上面に、メンテナンスに必要な電気部品のみ設置し、その他の電気部品をケースの側面に設けることにより、ケースに設置する電装品が激増しても、ケース上面の設置密度が高くなって熱干渉を受けるなどの従来の問題は生じなくなった。

(2) 絶縁板にブスバーを設けた上部配線板と起立配線板を交差状に配設し、上部配線板のブスバーに起立タブを屈曲形成し、起立配線板に、ブスバーの端部から屈曲し先端がケースの側面の挿着部に挿入される屈曲タブと、ブスバーの端部から平面状に突出し先端がケース上面の挿着部に挿入される平面タブを設けたので、ケースの側面に挿着部を設けた従来の電気接続箱のように、中間をクランク状に屈曲した段差タブを使用する必要がなくなり、ブスバーの組付性が向上する。

(3) 起立配線板を複数枚重ね合わせにした場合には、ケース上面に配列される挿着部を複数列にすることができるので、ケースの上面を短縮することができる利点と上方に突出するタブを選択する自由度が生じる利点と、重ね合わせの起立配線板の両面からは、多数の屈曲タブを突出させることができるので、起立配線板の構造が簡単にすることができ、部品製作及び組付工数を削減することができる利点などがある。



【図面の簡単な説明】

【図１】本発明の第１実施例を示す電気接続箱の縦断面図である。

【図２】図１の分解斜視図である。

【図３】図１の交差上に配設した配線板の構造を説明する斜視図である。

【図４】本発明の第２実施例を示す電気接続箱の縦断面＊図である。

【図５】組付中の第２実施例の電気接続箱の斜視図である。

【図６】第２実施例の電気接続箱の交差上に配設した配線板の要部縦断面図である。

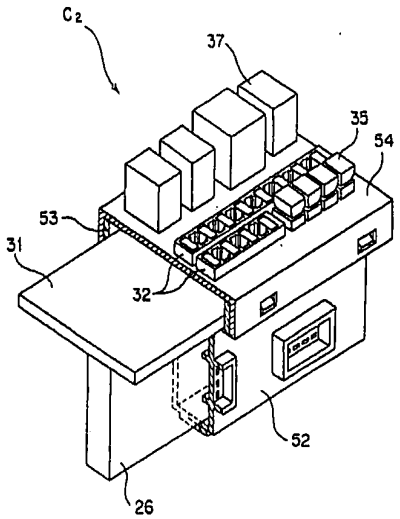
【図７】従来例の電気接続箱の分解斜視図である。

【図８】他の従来例の電気接続箱の分解斜視図である。

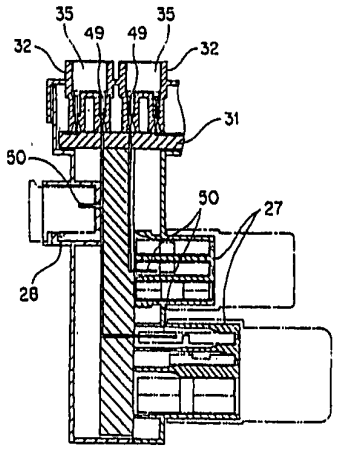
【符号の説明】

| | |
|---|---|
| $C_1$，$C_2$ | 電気接続箱 |
| ２０ | ケース |
| ２１，２２，５２，５３ | サイドカバー |
| ２３，５４ | メインカバー |
| ２６ | 起立配線板 |
| ２７ | リレー挿着部 |
| ２８ | コネクタ挿着部 |
| ３１ | 上部配線板 |
| ３２ | ヒューズ挿着部 |
| ３３ | ヒュージブルリンク挿着部 |
| ３４ | リレー挿着部 |
| ３６ | ヒュージブルリンク |
| ３７ | リレー |
| ４０，４７ | 絶縁板 |
| ４１，４２，４８ | ブスバー |
| ４３，４４，４５，４６ | 起立タブ |
| ４９ | 平面タブ |
| ３８ | リレー |
| ３９ | コネクタ |
| ５０ | 屈曲タブ |

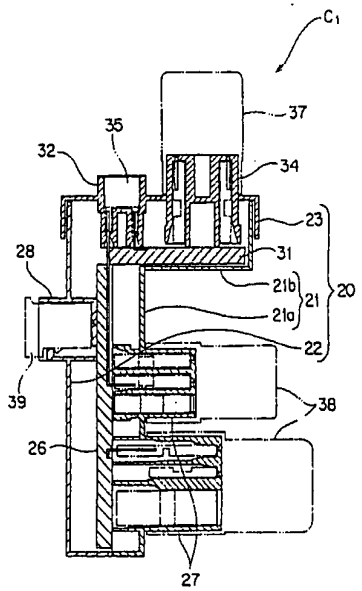
【図５】




【図６】

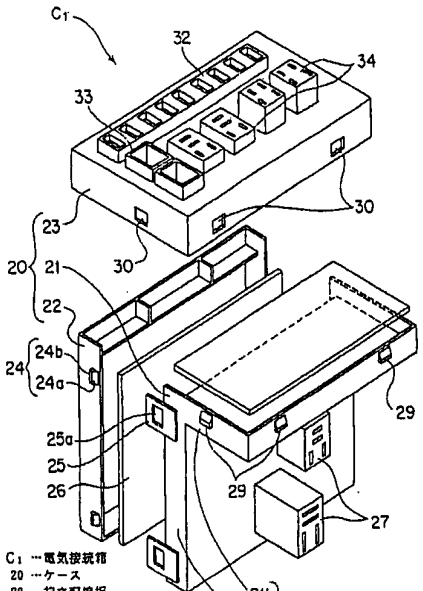


【図1】



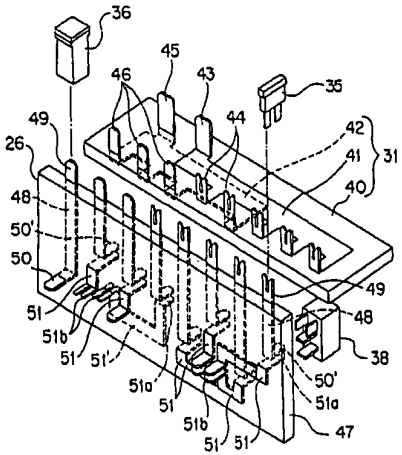

C1 …電気接続箱
20 …ケース
26 …起立配線板
27 …リレー押着部
28 …コネクタ押着部
31 …上部配線板
32 …ヒューズ押着部
34 …リレー押着部
38 …リレー
39 …コネクタ

【図2】




C1 …電気接続箱
20 …ケース
26 …起立配線板
32 …ヒューズ押着部
33 …ヒュージブルリンク押着部
34 …リレー押着部

【図3】

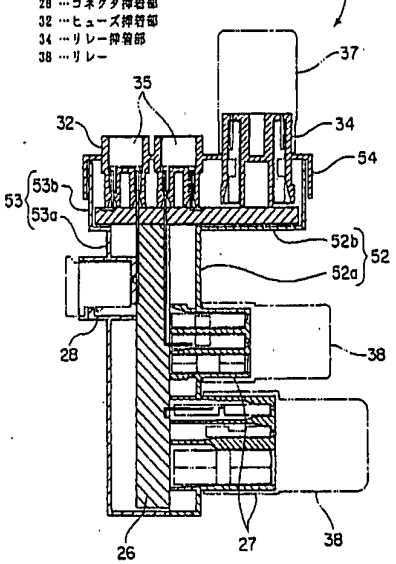



31 …上部配線板
38 …リレー
40 …絶縁板
41 …ブスバー
42 …ブスバー
43 …起立タブ
44 …起立タブ
45 …起立タブ
46 …起立タブ
47 …絶縁板
48 …ブスバー
49 …平面タブ
50 …屈曲タブ
50' …屈曲タブ

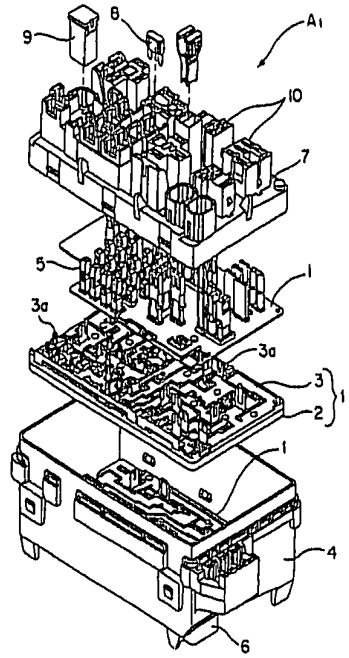


【図4】

C2 …電気接続箱
26 …起立配線板
27 …リレー押着部
28 …コネクタ押着部
32 …ヒューズ押着部
34 …リレー押着部
38 …リレー




【図7】




【図8】